



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,521	10/24/2003	Hideki Iwata	IWATA2	7422
1444	7590	03/24/2004	EXAMINER	
BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			FLETCHER III, WILLIAM P	
			ART UNIT	PAPER NUMBER
			1762	
DATE MAILED: 03/24/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/691,521

Applicant(s)

IWATA ET AL.

Examiner

William P. Fletcher III

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/24/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The term "primarily" in claims 1 and 10-14 is a relative term which renders the claim indefinite. The term "primarily" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how much of the resin layer must be synthetic resin to be considered "made primarily of synthetic resin."

Further, claim 1 recites "pressing a peripheral surface of the mandrel against the resin layer to finish the inner surface of the bearing without cutting there." It is unclear just what "there" is being referred to: Without cutting the resin layer? Without cutting the bearing? Without cutting the mandrel?

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1762

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1, 2, 5, 8, 9, 15, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reising (US 3,574,429 A) in view of the definition of the term “jig” from Webster’s Collegiate Dictionary, 10th Ed.**

With respect to claims 1 and 2, Reising teaches a method of processing an inner surface of a bearing having a cylindrical shape and having a synthetic resin layer on the innermost surface thereof. The method includes the steps of: inserting a mandrel into a bore of the bearing; heating the mandrel; and pressing a peripheral surface of the mandrel against the resin layer to finish the inner surface of the bearing. This reference does not teach cutting anything at any point in the method. (3:73-4:11).

Reising does not explicitly teach that the bearing is held in a jig.

A “jig” is defined as: “a device used to maintain mechanically the correct positional relationship between a piece of work and the tool or between parts of work during assembly” (see attached).

Since Reising teaches a process in which a work-piece and tool are brought into specific mechanical alignment, it would have been obvious to employ a means to ensure the correctness

Art Unit: 1762

of such a relationship. Clearly, a jig is a known means of doing this. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Reising so as to utilize a jig to hold the bearing. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of ensuring proper alignment of the bearing and the mandrel in the method.

With respect to claim 5, Reising teaches that the synthetic resin coating includes PTFE (4:4).

With respect to claims 8 and 9, Reising teaches that the synthetic resin coating includes thermosetting phenol-formaldehyde resin (4:1-11).

With respect to claims 15, 16, and 19, Reising does not teach any particular roughness of the peripheral surface of the mandrel. It is the examiner's position that such is a result-effective variable effecting the smoothness of the internal coating and resultant friction properties of the bearing. Further, it is the examiner's position that such a parameter is controlled and determined by the artisan when machining the mandrel. Consequently, absent evidence of unexpected results demonstrating the criticality of the claimed surface roughness, it would have been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* to optimize such a result-effective variable by routine experimentation (see MPEP § 2144.05(I and II)).

With respect to claim 20, by the same reasoning applied to the rejections of claims 15 and 16 above, absent evidence of unexpected absent evidence of unexpected results demonstrating the criticality of the claimed surface roughness, it would have been obvious to one of ordinary

Art Unit: 1762

skill in the art to modify the method of Reising in view of *Webster's* to optimize such a result-effective variable by routine experimentation (see MPEP § 2144.05(I and II)).

6. **Claims 3, 4, 6, 7, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reising (US 3,574,429 A) in view of the definition of the term "jig" from Webster's Collegiate Dictionary, 10th Ed., as applied to claims 1, 3, and 4 above, and further in view of Al et al. (US 3,958,595 A).**

The combined teaching of Reising and *Webster's* is detailed above.

With respect to claim 3, neither of these references teach: (a) that the mandrel is tapered; and (b) that the mandrel, heated to a predetermined temperature and expanded thereby, is inserted into the bore of the bearing so as to press the peripheral surface thereof against the resin layer.

With respect to (a), Al teaches a process in which the resin-coated inner surface of a bore (that may serve as a bearing shaft) is smoothed by the insertion of a heated, mandrel (3:7-25). As illustrated in Fig. 3, the leading portion of mandrel 42 is tapered. It would have been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* so as to utilize, as the heated mandrel, the mandrel of Al, having a tapered leading portion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully providing a heated mandrel to treat the coating.

With respect to (b), none of the cited references teach that the mandrel is heated and, consequently, expanded before being inserted into the bearing. It is the examiner's position that pre-heating the mandrel would save the time, particular in the production of multiple bearings, required to repeatedly heat the mandrel from room temperature. Consequently, it would have

Art Unit: 1762

been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* to do so.

With respect to claim 4, it would have also been obvious to one of ordinary skill in the art to further heat the mandrel in order to effect treatment of the resin layer. Ceasing to heat the mandrel would result in a cooling thereof and treatment would not be effected.

With respect to claims 6 and 7, Reising teaches that the synthetic resin coating includes PTFE (4:4).

With respect to claims 17 and 18, Reising does not teach any particular roughness of the peripheral surface of the mandrel. It is the examiner's position that such is a result-effective variable effecting the smoothness of the internal coating and resultant friction properties of the bearing. Further, it is the examiner's position that such a parameter is controlled and determined by the artisan when machining the mandrel. Consequently, absent evidence of unexpected results demonstrating the criticality of the claimed surface roughness, it would have been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* to optimize such a result-effective variable by routine experimentation (see MPEP § 2144.05(I and II)).

7. **Claims 10, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reising (US 3,574,429 A) in view of the definition of the term "jig" from *Webster's Collegiate Dictionary, 10th Ed.*, as applied to claims 1, 5, 8, and 9, respectively, above, and further in view of Jacobson (US 4,575,429 A).**

The combined teaching of Reising and *Webster's* is detailed above. Specifically, Reising teaches a specific example of a metal-backed, phenol-formaldehyde resin-impregnated PTFE

Art Unit: 1762

foam bearing (4:1-11), but places no explicit limitations on the particular composition of the bearing.

Neither of these references teach that the resin layer is formed by impregnating and coating a porous sintered layer provided on a backing metal with a synthetic resin.

Jacobson teaches just such a bearing, having excellent lubricating and wear properties (5:45-6:50).

It would have been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* so as to utilize, as the cylindrical bearing, the bearing of Jacobson. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully providing a suitable bearing having excellent lubricating and wear properties.

8. **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reising (US 3,574,429 A) in view of the definition of the term "jig" from *Webster's Collegiate Dictionary, 10th Ed.* and Al et al. (US 3,958,595 A), as applied to claim 6 above, and further in view of and Jacobson (US 4,575,429 A).**

The combined teaching of Reising, *Webster's*, and Al is detailed. Specifically, Reising teaches a specific example of a metal-backed, phenol-formaldehyde resin-impregnated PTFE foam bearing (4:1-11), but places no explicit limitations on the particular composition of the bearing.

Neither of these references teach that the resin layer is formed by impregnating and coating a porous sintered layer provided on a backing metal with a synthetic resin.

Jacobson teaches just such a bearing, having excellent lubricating and wear properties (5:45-6:50).

Art Unit: 1762

It would have been obvious to one of ordinary skill in the art to modify the method of Reising in view of *Webster's* and A1, so as to utilize, as the cylindrical bearing, the bearing of Jacobson. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully providing a suitable bearing having excellent lubricating and wear properties.

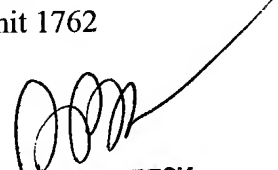
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WPF 3/19/2004
William P. Fletcher III
Examiner
Art Unit 1762


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700